



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/550,054

07/05/2006

Satish Reddy

100325.0202US

6184

24392 7590 09/22/2009

FISH & ASSOCIATES, PC

ROBERT D. FISH

2603 Main Street

Suite 1000

Irvine, CA 92614-6232

EXAMINER

PETTITT, JOHN F

ART UNIT

PAPER NUMBER

3744

MAIL DATE

DELIVERY MODE

09/22/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/550,054	Applicant(s) REDDY ET AL.	
	Examiner John F. Pettitt	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 1-8 and 13-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/15/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. It is noted that claims 13-14 were withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species in the action dated 03/17/2009, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 12/10/2009. The applicant should correct the claims to indicate the proper status identifiers of the claims.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 9 and 11-12** are rejected under 35 U.S.C. 102(b) as being anticipated by Hise et al. (US 5,021,232) hereafter Hise.

In regard to claim 9, Hise teaches a plant (see all figures) comprising: a dryer (12) comprising a desiccant and configured to receive a feed gas (26) comprising hydrogen sulfide and carbon dioxide, wherein the desiccant has sufficient water affinity to convert at least part of the hydrogen sulfide to carbonyl sulfide (fully capable); a source of liquid carbon dioxide (16) fluidly coupled to an absorber (14) and configured to provide liquid carbon dioxide (36) to the absorber (14); wherein the absorber (14) is further fluidly coupled to the dryer (12) and configured to receive the carbonyl sulfide and carbon dioxide (in 26) such that the liquid carbon dioxide in the absorber (14)

Art Unit: 3744

absorbs at least part of the carbonyl sulfide to so form a carbonyl sulfide-containing liquid carbon dioxide bottom product (40); and a distillation column (80, 90; column 2, line 43; column 10, line 55-60) fluidly coupled to the absorber (14) to receive the carbonyl sulfide-containing liquid carbon dioxide bottom product (40) and configured to separate the carbonyl sulfide (in 18'b) from the carbon dioxide (in 34'b).

In regard to claim 11, Hise teaches that the source of liquid carbon dioxide (16) comprises an autorefrigeration unit (44a,b, and/or 46a,b).

In regard to claim 12, Hise teaches that the autorefrigeration unit (16) further produces a hydrogen containing gas (62, 68, and/or 18'b).

4. Claims 9-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Alder et al. (US 4,270,937) hereafter Alder.

In regard to claim 9, Alder teaches a plant (see all figures) comprising: a dryer (20) comprising a desiccant (column 11, lines 40-43 hereafter scavenger) and configured to receive a feed gas (10) comprising hydrogen sulfide and carbon dioxide (column 10, lines 25-35), wherein the desiccant (scavenger) has sufficient water affinity to convert at least part of the hydrogen sulfide to carbonyl sulfide (fully capable thereof); a source of liquid carbon dioxide (55, 60) fluidly coupled to an absorber (30 and/or 35) and configured to provide liquid carbon dioxide to the absorber (30 and/or 35); wherein the absorber (30, and/or 35) is further fluidly coupled to the dryer (20) and configured to receive the carbonyl sulfide and carbon dioxide (in 25) such that the liquid carbon dioxide in the absorber (30 and/or 35) absorbs at least part of the carbonyl sulfide to so form a carbonyl sulfide-containing liquid carbon dioxide bottom product (39); and a

Art Unit: 3744

distillation column (55) fluidly coupled to the absorber (30 and/or 35) to receive the carbonyl sulfide-containing liquid carbon dioxide bottom product (39) and configured to separate the carbonyl sulfide (57) from the carbon dioxide (56).

In regard to claim 10, Alder teaches a gasification and shift unit (column 10, lines 9-10) coupled to the dryer (20) to provide a shifted syngas (10; column 10, line 9) as the feed gas (10) to the dryer (20).

In regard to claim 11, Alder teaches that the source (55, 60) of liquid carbon dioxide (LCO₂) comprises an autorefrigeration unit (40, 33, 73, 77, 79, and/or 75).

In regard to claim 12, Alder teaches that the autorefrigeration unit (40, 33, 73, 77, 79, and/or 75) further produces a hydrogen containing gas (100).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Art Unit: 3744

6. Claim 9-12 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hise in view of Alder.

In regard to claim 9, Hise teaches all of the claim limitations of claim 9, however, assuming in arguendo that the dryer (12) does not comprise a desiccant wherein the desiccant has sufficient water affinity to convert at least part of the hydrogen sulfide to carbonyl sulfide. It is noted that such dehydration is well known for removing trace quantities of impurities, therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the dryer (12) of Hise to employ a desiccant for the purpose of removing water and other impurities.

In regard to claim 10, Hise teaches all of the claim limitations of claim 10 as discussed relative to 35 U.S.C. § 102 above, but does not explicitly teach a gasification and shift unit coupled to the dryer (12) to provide a shifted syngas as the feed gas to the dryer (12). However, sending a shifted syngas as the feed gas to the dryer (20) from a gasification and shift unit is a well known method of providing syngas, as is taught by Alder (column 10, lines 9-10). Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to employ the method of treating natural gas taught by Hise on a shifted syngas for the purpose of providing the benefits Hise (column 2, lines 61-63) to a syngas.

In regard to claim 11, Hise teaches that the source of liquid carbon dioxide (16) comprises an autorefrigeration unit (44a,b, and/or 46a,b).

In regard to claim 12, Hise teaches that the autorefrigeration unit (16) further produces a hydrogen containing gas (62, 68, and/or 18'b).

Response to Arguments

7. Applicant's arguments with respect to claims 9-12 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John F. Pettitt whose telephone number is 571-272-0771. The examiner can normally be reached on M-F 8a-4p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler or Frantz Jules can be reached on 571-272-4834 or 571-272-

Art Unit: 3744

6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John F Pettitt /
Examiner, Art Unit 3744

/Cheryl J. Tyler/
Supervisory Patent Examiner, Art
Unit 3744

JFP III
September 2, 2009